

What Is Claimed Is:

1. Optical imaging device, in particular an objective for microlithography in the field of EUVL for producing semiconductor elements, having a beam path, a plurality of optical elements and a diaphragm device with an adjustable diaphragm opening shape, wherein the diaphragm device has a diaphragm store with a plurality of different diaphragm openings with fixed shapes in each case, which can be introduced into the beam path.
2. Optical imaging device according to Claim 1, wherein said diaphragm store is designed as a revolving disc diaphragm stack with a plurality of individual revolving disc diaphragms which are provided with diaphragm openings.
3. Optical imaging device according to Claim 2, wherein said revolving disc diaphragm stack is arranged outside said optical imaging device.
4. Optical imaging device according to Claim 2, wherein said revolving disc diaphragms are accommodated inside said revolving disc diaphragm stack in separate plug-in units.
5. Optical imaging device according to Claims 2, wherein said revolving disc diaphragm stack is designed displaceably in such a way that said revolving disc diaphragm to be introduced into the beam path can be selected by displacing said revolving disc diaphragm stack.
6. Optical imaging device according to Claim 2, wherein said diaphragm device has a feeder device which removes said revolving disc diaphragm to be introduced into the beam path from said revolving disc diaphragm stack, in particular also from the corresponding separate plug-in unit, introduces it into the beam path, and deposits it again in said revolving

disc diaphragm stack after it has been used.

7. Optical imaging device according to Claim 6, wherein said feeder device is designed as a moveable robot gripper arm.

8. Optical imaging device according to Claim 2, wherein said diaphragm device has a lifting device for positioning said revolving disc diaphragm in the beam path.

9. Optical imaging device according to Claim 2, wherein said diaphragm device has a holding device for fixing said revolving disc diaphragm in the beam path.

10. Optical imaging device according to Claim 2, wherein one of said optical elements has a holding device for fixing said revolving disc diaphragm in the beam path.

11. Optical imaging device according to Claim 2, wherein said lifting device has a holding device for fixing said revolving disc diaphragm in the beam path.

12. Optical imaging device according to Claim 9, wherein said lifting device is pressed against said holding device by spring elements for the purpose of dynamically decoupling said revolving disc diaphragm from said optical imaging device.

13. Optical imaging device according to Claim 9, wherein for the purpose of dynamically decoupling said revolving disc diaphragm from said optical imaging device, said revolving disc diaphragm can be fixed on said holding device via magnetic forces.

14. Optical imaging device according to Claim 8, wherein said lifting device is dynamically decoupled.

15. Optical imaging device according to Claim 2, comprising an opening through which said revolving disc diaphragm can be introduced into the beam path.

16. Optical imaging device according to Claim 1, wherein said diaphragm device is dynamically decoupled.

17. Optical imaging device according to Claim 8, wherein said lifting device picks up said revolving disc diaphragm from said robot gripper arm.

18. Optical imaging device according to Claim 8, wherein said lifting device is designed as a rocker.

19. Optical imaging device according to Claim 8, wherein said lifting device is designed as a set of scales, in particular with a parallelogram guide.

20. Optical imaging device according to Claim 8, wherein said lifting device is of pantographic design, in particular having solid joints.

21. Optical imaging device according to Claim 1, wherein a sheet-metal strip which is wound onto two rollers and held tensioned is provided as a diaphragm store, said sheet-metal strip having a plurality of, in particular, various diaphragm openings of fixed shapes, and it being possible by rotating said rollers to adjust said diaphragm setting by varying the diaphragm openings.

22. Optical imaging device according to Claim 21, wherein the tension of said sheet-metal strip, and the height of said diaphragm opening, are kept constant by at least two additional guide rollers, which cause a resilient pretensioning, the first roller being arranged in a fixed fashion, and the

second being supported flexibly in the spacing direction.

23. Optical imaging device according to Claim 21, wherein the position of said diaphragm openings can be determined by markings, in particular by cut-outs, at the edge of said sheet-metal strip.

24. Optical imaging device according to Claim 1, wherein it is used as a projection objective, in particular in a projection exposure machine for microlithography for producing semiconductor components.

25. Diaphragm device for stopping down an optical imaging device, in particular an objective for microlithography in the field of EUVL for producing semiconductor components in accordance with claim 1.

26. EUV projection exposure machine comprising at least one mirror and a diaphragm device with an adjustable diaphragm opening shape which is located nearby said mirror, wherein at least three, in particular at least six different diaphragm opening shapes can be implemented.

27. EUV projection system according to claim 26, wherein said diaphragm opening is arranged in said diaphragm in a decentral manner.